

### Office Action Summary

**Application No.**

10/675,693

**Applicant(s)**

LOU ET AL.

**Examiner**

Dac V. Ha

**Art Unit**

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-85 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-85 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. **Claims 1, 17, 35, 47, 61, 73**, are rejected on the ground of nonstatutory double patenting over claims 1 of U. S. Patent No. 7,133,473 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: claim 1 of Patent No. 7,133,473 recites all claimed subject matter of that in claims 1, 17, 35, 47, 61, 73 of the present application (note: phase rotation recited in claim 1 of Patent No. 7,133,473 also teaches "derotating a signal constellation" subject matter of the present application).

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

3. **Claims 2-16, 18-34, 36-46, 48-60, 62-72, 74-85** are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-70 of U.S. Patent No. 7,133,473. Although the conflicting claims are not identical, they are not patentably distinct from each other because these claimed subject matter would have been obvious to one skilled in the art as application specific.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1, 2, 4, 5, 11, 36, 38, 39, 41, 61, 62, 64, 65, 67,** are rejected under 35 U.S.C. 102(b) as being anticipated by Claydon et al. (US 6,154,871) (hereafter Claydon).

**Regarding claims 1, 35, 61, 62,** Claydon discloses all claimed subject as followed:

“a demodulator that generates a demodulated symbol sequence by derotating a signal constellation of a received symbol sequence; a dimension demultiplexer that communicates with said demodulator and that generates in-phase and quadrature

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components of said demodulated symbol sequence; and a branch metric computation module that communicates with said dimension demultiplexer and that generates branch metrics based on said in-phase and quadrature components" in Fig. 2, all elements; col. 2, lines 1-55; col. 3, lines 31-57, wherein the receiver in Fig. 2 discloses both the derotating of the received signal and generation of the quadrature signal components.

**Regarding claim 2, 36**, Claydon further discloses "a Viterbi decoder that communicates with said branch metric computation module and that generates a user data sequence based on said branch metrics" in Fig. 14, col. 4, lines 37-40.

**Regarding claims 4, 38, 64**, the claimed subject matter "wherein said Viterbi decoder generates said user data sequence by determining a minimum of a plurality of path metrics that comprise accumulations of said branch metrics" is inherent of the Viterbi decoding process.

**Regarding claims 5, 39, 65**, similar to that of claim 4.

**Regarding claims 11, 41, 67**, Claydon further discloses the claimed subject matter "wherein said signal constellation ... 256-QAM" in Abstract.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 17, 47, 73** are rejected under 35 U.S.C. 102(e) as being anticipated by Vasquez (US 7,046,747).

**Regarding claim 17, 47, 73,** Vasquez discloses:

“at least one receiving antenna that receives a received symbol sequence; and a space-time block decoder that communicates with said at least one receiving antenna, that generates a user data sequence based on said received symbol sequence, and that includes: a branch metric computation module that generates branch metrics based on in-phase and quadrature components of a demodulated symbol sequence, wherein said demodulated symbol sequence is based on said received symbol sequence” in Fig. 1; element 120; col. 3, line 35 to col. 5, line 3.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 6-10, 12-16, 37, 40, 42-46, 63, 66, 68-72** are rejected under 35 U.S.C. 103(a) as being unpatentable over Claydon.

**Regarding claims 6-10, 12-16, 37, 40, 42-46, 63, 66, 68-72,** these claimed subject matter would have been easily realized by one skilled in the art as application specific/preferences.

6. **Claims 18-34, 48-60, 76-85** are rejected under 35 U.S.C. 103(a) as being unpatentable over Vasquez in view of Claydon.

**Regarding claims 18, 48, 74,** Vasquez discloses almost all claimed subject matter in claim 18, as stated above, except for “wherein said space-time block decoder includes a demodulator that communicates with said at least one receiving antenna and that generates said demodulated symbol sequence by derotating a signal constellation of said received symbol sequence”. However, Claydon discloses that such technique is known in the art (Fig. 2, all elements; col. 2, lines 1-55; col. 3, lines 31-57) for compensating the variance (i.e. phase) in the received signal. Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate such teaching from Claydon into Vasquez to further improve the demodulation/decoding process in the receiver.

**Regarding claims 19, 49,** Claydon further discloses “said space-time block decoder includes a dimension demultiplexer that communicates with said demodulator and said branch metric computation module and that generates said in-phase and quadrature components” in Fig. 2, all elements; col. 2, lines 1-55; col. 3, lines 31-57.

**Regarding claims 21,** Claydon further discloses “a Viterbi decoder that communicates with said branch metric computation module and that generates a user data sequence based on said branch metrics” in Fig. 14, col. 4, lines 37-40.

**Regarding 20, 22-28, 30-34, 50, 52-54, 56-60, 75, 77-79, 81-85,** , these claimed subject matter would have been easily realized by one skilled in the art as application specific/preferences.

**Regarding claims 29, 55, 80,** Claydon further discloses the claimed subject matter “wherein said signal constellation ... 256-QAM” in Abstract.

**Regarding claim 76**, Claydon further discloses the claimed subject matter "generating said user data based on said branch metric" in col. 2, lines 1-55; col. 3, lines 31-57.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Eidson (US 6,922,438) discloses System For MPSK Symbol Hypothesis Testing.

Daribi et al. (US 6,157,683) discloses Method And System For Automatic Invariancy Compensation In Digital Communication Receiver.

Meyer (US 7,109,787) discloses High-Efficiency Circuit For Demodulating Carriers In Quadrature.

Nikula et al. (US 6,690,751) discloses Method And Receiver For Receiving And Decoding Signals Modulated With Different Modulation Methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dac V. Ha whose telephone number is 571-272-3040. The examiner can normally be reached on 5/4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-3086. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dac V. Ha  
Primary Examiner  
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